

19. Give a detailed study with suitable examples the mechanism of the following rearrangement.
- (a) Stevens rearrangement (5)
 - (b) Von—Richter rearrangement (5)
20. (a) Give the principle and applications of Thin Layer chromatography. (5)
- (b) What is recrystallization? Explain the various steps involved in it. (5)
-

NOVEMBER/DECEMBER 2025

**GCH41/DCH41 — ORGANIC
CHEMISTRY IV**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the requirements for a protecting group?
2. Give the methods of protection of R—NH₂.
3. State isoprene rule.
4. What are alkaloids? Give an example.
5. What are proteins? How it differs from peptides?
6. Define nucleic acids.
7. Give any one synthetic use of Pinacol-Pinacolone rearrangement.
8. Ring expansion can occur in Demjanov rearrangement. Explain.



9. How are suspended bubbles removed from the mobile phase in HPLC?
10. What is the importance of fractional distillation?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) What are protecting groups? How is aldehyde protected and deprotected?

Or

- (b) What is Robinson annulation? Write a mechanism for this reaction.

12. (a) Outline the structural elucidation of camphor.

Or

- (b) Sketch the total synthesis of quinine.

13. (a) How do you determine the tertiary structure of proteins?

Or

- (b) What is Merrifield solid-phase synthesis? Give its importance in peptide synthesis.

14. (a) Favorskii rearrangement involves cyclopropanone intermediate — Account for this. Explain its application in synthetic organic chemistry.

Or

- (b) Write a short note on Hoffmann-Loeffer-Freytag reactions.

- (a) Give the principle and applications of gas chromatography.

Or

- (b) Discuss the principle of steam distillation.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain how the enamines serve as the best intermediates for alkylation and acylation in organic synthesis.
17. Outline the total synthesis of Reserpine.
18. Briefly explain the steps involved in the biosynthesis of cholesterol.

